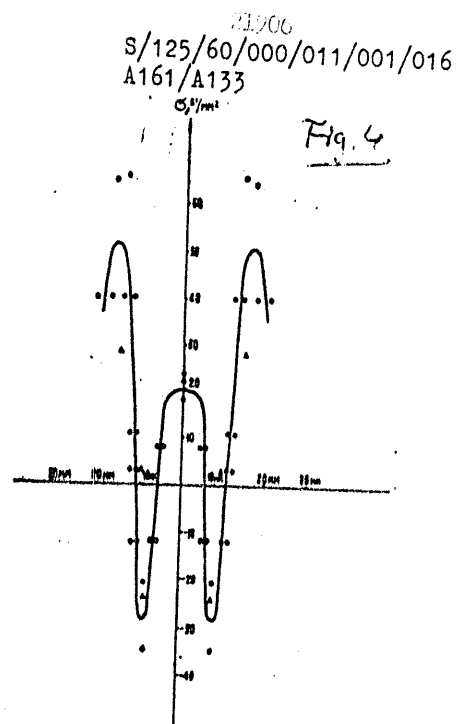


X-Ray measurements of first order...

Figure 4:

Distribution of longitudinal stresses in a butt weld in 35Kh3N3M steel, with austenitic weld metal. Deformations measured  $\odot$  - with deformatior;  
 $\circ$  - with resistor strain gages;  
 $\Delta$  - by the X-ray method



X-Ray measurements of first order...

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Fig. 2

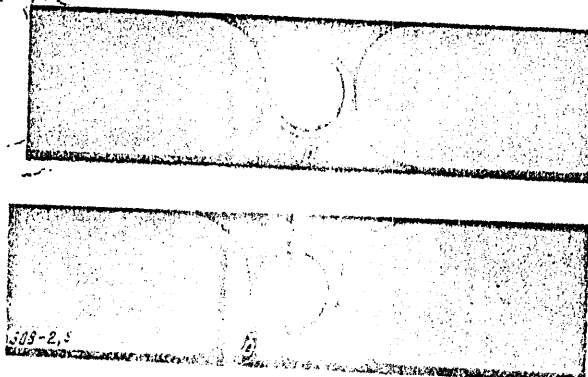


Figure 2

- a - 35Kh3N3M steel
- b - fused on "gage" metal

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X-Ray measurements of first order...

stress distribution in an austenite steel butt joint (Fig.4) measured by the new method and with two others for comparison. It is an advantage of the new method that it makes the observation of changing stresses possible during relaxation process after hardening. It is expected that the X-ray method will come into use for studies of hardening processes in metals. There are 4 figures and 8 Soviet references.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektrosvariki im.Ye. O.Patona AN USSR ("Order of the Red Banner of Labor" Electric Welding Institute im.Ye.O.Paton of the Academy of Sciences of the Ukrainskaya SSR)

SUBMITTED: July 16, 1960

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# X-Ray measurements of first order...

80°40'), and in the case of austenitic steel the reflection (220) of  $K_{\alpha V}$  radiation ( $\theta = 80^{\circ}10'$ ). The  $\psi$  angle should be as large as possible. Still, the interference lines are diffused through absorption at a too large  $\psi$  angle, and it is therefore recommended to use  $\psi$  of about 45° and not larger. The distance from specimen to film is to be chosen so as to increase the accuracy at practically possible exposition time. Tests of specimens proved that X-raying is only applicable for approximate stress measurements in common carbon steel; in hardening 35X3H3M (35Kh3N3M) steel the measurements were impossible because of diffused interference lines. The "built-up strain gage method" had been suggested after failure with measurements in hardening steel, and was a success. Its essence is the following. Grooves 10 mm deep and 1 - 1.5 mm wide were cut in the metal, and УОНН-13/45 (УОНИ-13/45) 3 mm electrodes fused into the grooves using welding current not exceeding 90 amp. The fused metal had a low carbon and alloying element content and did not harden in the subsequent welding process. The X-ray pictures in the heat-affected metal with the "gages" were clear (Fig.2,b), and the distance between the lines could be measured with an accuracy usual for the X-ray method. The method is applicable for measuring stresses not exceeding 40-50 kg/mm<sup>2</sup>, for the "gage" metal flows at higher stresses. A curve shows the longitudinal

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X-Ray measurements of first order...

$$\sigma_{\varphi} = \frac{d_{\psi} - d_{\perp}}{d_{\perp}} \cdot \frac{E}{1 + \nu} \cdot \frac{1}{\sin^2 \psi} \quad (1)$$

where E is the Young modulus;  $\nu$  - the Poisson coefficient;  $\psi$  - the angle between the X-ray and the normal to the specimen surface in inclined X-ray picture. The formula (1) can be transformed:

$$\sigma_{\varphi} = B(L_{\psi} - L_{\perp});$$

$$\frac{\operatorname{ctg} \theta \cos^2 (180^\circ - 2\theta)}{4R} \cdot \frac{E}{1 + \nu} \cdot \frac{1}{\sin^2 \psi} \quad (2)$$

where  $L_{\psi}$  and  $L_{\perp}$  are the diffraction ring diameters at inclined and perpendicular X-raying;  $\theta$  - the Wolf-Bragg angle; and R the distance from the specimen to the film. The B value is determined by the photographing conditions that are constant, and it has a numerical value. This makes the formula (2) very handy in practical work. The accuracy of stress measurements depends on the  $\theta$  and  $\psi$  angles, the R distance, and the elastic properties of the metal. It is obvious that the  $\theta$  angle should be as large as possible. In the case of ferritic steel it is better to use the reflection (310) of  $K_{\alpha}\text{Co}$  ( $\theta =$

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18.8260  
1.2360 also 1573

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A161/A133

AUTHORS: Kareta, N.L., and Makara, A.M.

TITLE: X-Ray measurements of first order residual stresses in the heat-affected zone of welds on hardening steel

PERIODICAL: Avtomaticheskaya svarka, no. 11, 1960, 3-9

TEXT: The article contains brief general information on X-ray measurements of residual welding stresses in the heat-affected zone of common steel, and a detailed description of a new method developed for such measurements in hardening steel, called "method naplavlennykh datchikov" ("Built-up strain gage method"). Two X-ray photographs have to be prepared - at right angles, and with a slanting angle relative to the surface in the stress direction. The interplane distances  $d_1$  and  $d_2$  are found from the pictures, and they are not equal in the presence of residual stresses of first order. Stress is calculated using the formula (Ref.7):

X

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SOV/125-60-2-2/21<sup>67700</sup>

Investigation of the Nature of Cold Cracking in Heat-Affected Zone  
in Welded Hardening Steels

-diagram, 7 graphs, 9 photos, and 35 references, of  
which 25 are Soviet, 1 German, and 9 English.

ASSOCIATION: Ordena Trudovogo Krasnogo Znameni Institut elektros-  
varki im. Ye.O. Patona AN USSR (Order of the Red Banner  
of Labor Institute of Electric Welding imeni Ye.O.  
Paton of the AS UkrSSR).

SUBMITTED: December 1, 1959. 4

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67700

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Investigation of the Nature of Cold Cracking in Heat-Affected Zone  
in Welded Hardening Steels

results of the described investigation (of interest to general metal science and metal physics) are as follows:  
a) The effect of low temperature and vibration on the resistance of hardened metal to slow destruction. Particularly interesting is the fact that slow destruction resumes after defreezing; b) Very small plastic deformations have a noticeable effect on the kinetics of the martensite transformation; c) A method has been developed for studying the formation and propagation of cracks with the use of ultrasonic control; d) Also a method for studying the effect of small plastic deformation on the martensite transformation, with the use of a two-layer specimen; e) And a method of X-ray study of stresses in hardened metal, with the use of fused-on metal pickups. There are 2 diagrams, 1 photo-

4

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Investigation of the Nature of Cold Cracking in Heat-Affected Zone  
in Welded Hardening Steels

results of the described investigation (of interest to general metal science and metal physics) are as follows: a) The effect of low temperature and vibration on the resistance of hardened metal to slow destruction. Particularly interesting is the fact that slow destruction resumes after defreezing; b) Very small plastic deformations have a noticeable effect on the kinetics of the martensite transformation; c) A method has been developed for studying the formation and propagation of cracks with the use of ultrasonic control; d) Also a method for studying the effect of small plastic deformation on the martensite transformation, with the use of a two-layer specimen; e) And a method of X-ray study of stresses in hardened metal, with the use of fused-on metal pickups. There are 2 diagrams, 1 photo-

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Investigation of the Nature of Cold Cracking in Heat-Affected Zone  
in Welded Hardening Steels

changes of stresses must be eliminated and the hydrogen content must be reduced. 7) New methods of crack prevention can be recommended: a) increased quantities of additives in weld metal which displace the transformation of undercooled austenite into the zone of low temperature and increase the volume in the gamma-alpha transformation; b) slowing the cooling of the heat-affected zone in the interval 100-200°C in which the restoration of the nuclear structure on the grain boundaries is still sufficiently intensive; c) the use of vibration after welding, i.e. knocking by a pneumatic chisel, grinding off the surplus weld metal, and the use of ultrasonic vibration. 8) The methods of investigation (of transformation in the heat-affected zone, and evaluation of the resistance to cracking) recommended by N.N. Prokhorov [Ref. 21, 22] should be used. 9) The

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Investigation of the Nature of Cold Cracking in Heat-Affected Zone  
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small tension stresses in the transverse direction in the middle part of the seam, and by comparatively large compression stresses along its edges. 4) The cracks originate along the borders of the grains in the large grain section, and, slowly develop first only along the borders, and then in the grain body. 5) All processes that further an orderly atom structure along the grain borders, the strengthening of these borders, and help to involve the grain body into the deformation process, increase the resistance of the heat-affected zone against the formation of cracks. 6) Crack resistance in the heat-affected zone can be increased by improving the metal structure, i.e. by displacing the martensite transformation into the zone of high temperature and slowing down the cooling during this transformation, as well as limiting the overheating. Besides, abrupt

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in Welded Hardening Steels

suggested by S.S. Shurakov, that the decrease in strength is connected with the quasiviscous and plastic flow of the grain boundaries,<sup>1</sup> was confirmed by the experiments. The following conclusions can be drawn.

1) It appears that cracks form as a result of slow disintegration of metal which has been superheated and hardened under specific conditions in the heat-affected zone. 2) The kinetics of transformation of supercooled austenite in the heat-affected zone depend not only on the steel composition and the thermic welding cycle, but also on the cycle of elastico-plastic deformation in this zone during the welding process. 3) The stress condition of welded joints of hardening steels is characterized by sharp changes in the longitudinal stresses on the border seam-zone of hardening and, therefore, by considerable shearing stresses on this border; by 4

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Investigation of the Nature of Cold Cracking in Heat-Affected Zone  
in Welded Hardening Steels

new method (developed with the cooperation of V.A. Tsechal'). The "hardening hypothesis" on which some Soviet and foreign investigation works were based [Ref. 16, N.N. Rykalin and L.A. Fridlyand; Ref. 18, N.O. Okerblom and other Soviet references; Ref. 25, L. Reeve; Ref. 26, C.B. Voldrich; Ref. 27 and 28, A.H. Cottrell of the British references], and the "hydrogen hypothesis" of crack origination [Ref. 13, 14, A.H. Cottrell; Ref. 15, K.L. Zeyen] were disproved, i.e. found not generally true. The technology of the experiments are described. It is mentioned that the X-ray stress measurement method used (developed jointly with N.L. Kareta), with a thin layer of low-carbon steel welded on the specimen serving as a pickup showing the deformation, will be later described. The hypothesis *4*

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AUTHOR: Makara, A.M.

TITLE: Investigation of the Nature of Cold Cracking in Heat-Affected Zone in Welded Hardening Steels

PERIODICAL: Avtomaticheskaya svarka, 1960, Nr 2, pp 9-33 (USSR)

ABSTRACT: The article presents the contents of the author's report at the all-Union coordination conference on the problem of cold cracking which convened in Kiyev 12-13 Nov 1959. It is a brief review of data from 35 sources [Ref. 1-35], Soviet and foreign (9 of which were partly or wholly written by Makara), and information on new experimental data. The described experiments were carried out with "35Kh3N3M" steel, which is highly prone to cold cracking in the heat-affected zone at the welds. The low-hydrogen "AN-62" flux and ferrite "Sv-08" welding wire were used. An ultrasonic "UZD-7H" flaw detector was employed for revealing cracks by a

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4

MAKARA, A.M.

PHASE I BOOK EXPLOITATION

SOV/5073

Atkadeiya nauk URSS, Kiev. Institut elektrozavayuvannya  
Vvedeniye novykh sposobov svari v promyshlennost'; sbornik statey.  
Vyd. 3. (Introduction of New Welding Methods in Industry: Col-  
lection of Articles. V. 3) Kiev, Gos. izd-vo tekhn. lit-ry  
URSSR, 1960. 207 p. 5,000 copies printed.

Sponsoring Agency: Ordona Trudovogo Kransogo Znameni Institut  
elektrozavayki imeni akademika Ye. O. Patona Akademii nauk  
Ukrainskoy SSR.

Ed.: M. Pisarenko; Tech. Ed.: S. Matusovich.

PURPOSE: This collection of articles is intended for personnel in  
the welding industry.

COVERAGE: The articles deal with the combined experiences of the  
Institut elektrozavayki imeni Ye. O. Patona (Electric Welding  
Institute imeni Ye. O. Paton) and several industrial enterprises  
in solving scientific and engineering problems in welding

technology. Problems in the application of new methods of welded,  
chanaged welding and electroslag welding are discussed.  
This is the third collection of articles published under the same  
title. The first collection was published by Ye. O. Paton, Academician of  
the Academy of Sciences Ukrainian SSR and Lenin Prize winner.  
There are no references.

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SOV/125-12-4-7/18

Working out the Technology of "Electric Slag Welding" of Shells,  
Made of Medium Alloyed Steel Type AK

electrode-wire: 3mm; welding-clearance 25-28 mm;  
speed of welding: 0.7-0.8 m/h. Alternation current.  
The chemical consistence of the electrode wire is  
shown in schedule 1. Investigation of the macro-  
and micro-structure of the weld showed a coarse cry-  
stalline structure, which disappeared after heat-  
treatment. For electric-slag-welding the apparatus  
type A-372-3 (Figure 10) is used. There are 7 photo-  
graphs, 2 graphs, 4 diagrams and 6 Soviet references.

ASSOCIATION: Ordena trudovogo krasnogo znameni institut elektro-  
svarki im. S.O. Patona AN USSR (Institute of the  
Order of the Red Banner of Labor for Electric Welding  
imeni S.O. Pator AN UkrSSR) Gor'kovskiy zavod "Kras-  
noye Sormovo" (Gor'kiy Plant "Krasnoye Sormovo")

SUBMITTED: February 13, 1958

Card 2/2



25(1,5)

SOV/125-12-4-7/18

AUTHORS:

~~Makara~~, A.M., Candidate of Technical Sciences, Novikov, I.V., Nazarov, G.V., Ryabinkin, V.I.,

TITLE:

Working out the Technology of "Electric Slag Welding" of Shells, Made of Medium Alloyed Steel Type AK

PERIODICAL:

Avtomaticheskaya svarka, 1959, Vol 12, Nr 4, pp 55-65 (USSR)

ABSTRACT:

The article presents the results of investigations, made in the Institute for Electric Welding and the "Krasnoye Sormovo" Plant. To weld the steel AK complex alloyed wires type EI 581 and EI 616 are used. The content of dangerous elements as carbon, sulphur, phosphorus in the weld is small, because there are very small amounts of them in the basic metal and in the metal of the electrode-wire. To weld AK-steel with a thickness of 50 mm following conditions were chosen: electrode feed rate: 180-200 m/h; arc-voltage: 54-55 V; welding-current: 400-440 A; depth of the slag-tub: 45-50 mm; dry-boom: 60-60 mm; diameter of

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SOV/125-59-10-1/16  
The Welding of High-Quality Steels by Means of Fused Fluxes  
phosphorus content, high toughness, and simplicity of  
application. There are 3 tables, 2 diagrams, 2 pho-  
tographs, and 7 Soviet references.

ASSOCIATION: Ordena trudovogo krasnogo znameni institut elektros-  
varki imeni Ye.O. Patona AN USSR (Order of the Red  
Banner of Labor Institute of Electric Welding imeni  
Ye.O.Paton AS UkrSSR)

SUBMITTED July 2, 1959

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SOV/125-59-10-1/16

## The Welding of High-Quality Steels by Means of Fused Fluxes

8, 16 and 25mm thick; the welding was carried out by types 18KhMA and Kh5M electrode wire. Fig 1 shows a cross-section of the seam-edge, and the welding process was as follows: layer 1 -  $I_{sv} = 200$  amps,  $U_d = 26$  volts,  $V_{sv} = 15$  m/hour; layer 2 and subsequent layers -  $I_{sv} = 350$  amps,  $U_d = 30$  volts,  $V_{sv} = 19$  m/hour. The edges were previously heated to  $250^\circ\text{C}$ . Table 2 gives the chemical composition of the upper-layer metal of several multi-layer seams and also furnishes data on tests on Type AN-348A flux, showing that the use of AN-15 flux cuts the content of oxygen by 200% and of phosphorus by 100%. Fig 2 is a diagram of the method used for cutting tubes of 3 thicknesses, and the macro-structure of the seam is given in Fig 3. Table 3, containing the results of tests carried out on the test-pieces after the thermal processing of 30KhGSNA steel (temperature at  $900^\circ\text{C}$ , annealing at  $250-300^\circ\text{C}$ ), indicate that the toughness of the metal of the seam is raised to an average of 8 kilogram meters/cm<sup>2</sup>. In their conclusion the authors stress the advantages of this flux: low oxygen and

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SOV/125-59-10-1/16

## The Welding of High-Quality Steels by Means of Fused Fluxes

as 1% in the welded seam; the toughness of the seam thus decreased accordingly, this drop also being heightened by the presence of carbon and manganese in the seam. To obtain a high degree of toughness in the welding of high-quality steel it is thus necessary to keep the  $\text{SiO}_2$  and  $\text{MnO}$  content to a minimum. It is also stressed that fluxes intended for such welding should be of maximum basicity, in order to lower the sulfur and phosphorus content in the seams, to raise their resistance to the formation of crystallization cracks, and also to improve the initial structure of the metal of the seam [Refs 6 and 7]. Fluxes answering to these requirements are given in Table 1. Flux Type AN-15, which is superior to all others, is made up of aluminum oxide, feldspar, fluoric spar, caustic magnesite and manganese ore, its 2.2%  $\text{MnO}$  content reducing the oxidation of manganese in the seam and cutting the phosphorus content to virtually nil; it is simple in manufacture and versatile in use. Tests were conducted on this flux by means of test-pieces of 30KhGSNA steel tubing 100-300mm in diameter, with walls

Card 2/4

18(5)  
 AUTHOR: Makara, A.M., and Slutskaya, T.M., Candidates of  
 Technical Sciences, and Mosendz, N.A., Engineer  
 TITLE: The Welding of High-Quality Steels by Means of Fused  
 Fluxes  
 PERIODICAL: Avtomaticheskaya svarka, 1959, Nr 10, pp 3-8 (USSR)  
 ABSTRACT: While D.M. Rabkin, A.M. Makara and Yu. N. Gotal'skiy,  
 of the Ye. O. Paton Institute of Electric Welding,  
 developed fused fluxes (Types AN-15 and AN-42) of low  
 silicon and manganese content back in 1951 for use in  
 the welding of steel of medium hardness, this article  
 is concerned with the results of tests showing that  
 the use of Type AN-15 fused flux in the welding of  
 high-quality steel can raise the toughness to over 6  
 kilogram meters/cm<sup>2</sup>. The authors concur with K.V.  
 Lyubavskiy [Ref 2] in his theory that the presence  
 of oxygen in the metal of the seam is the cause of  
 the low toughness, but add that the phosphorus con-  
 tent is also an important factor. Of the fluxes  
 tested it was found that the content of phosphorus in  
 flux Type AN-348A (made from Chiatura ore) amounted  
 to as much as .12%, meaning a percentage of as much

Card 1/4

M.: V. Orlowski: Tech. Ed.: 3. Nature vich:

Wages. The fact is that the wages in the mining industry.

**NOTEBOOK:** The book contains a discussion of welding techniques and problems by a group of scientists and welders. Much attention is given to progress in the application of new methods of mechanized welding and automatic welding. This is the second collection of articles published under the title prepared and published by the Institute for the Study of Welding, Moscow, U.S.S.R. The first book, published by the Institute for the Study of Welding, Moscow, U.S.S.R., was titled "Electric Welding" (1960, No. 10). The present one is written by A. Ia. Petrov, Academician of the USSR Academy of Sciences and Winner of the Lenin Prize, and V. A. Kuznetsov, Academician of the Ukrainian Academy of Sciences.

[illegible]

**Abstract** welding apparatus and equipment by electro-slag welding of medium-alloyed steel forgings.

along welding of large flanges of industrial machines. Steel

[illegible][illegible]

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SOV/125-58-11-3/16

An Investigation on the Distribution of Hydrogen in Weld Joints of Medium Alloy Steels with Austenite and Ferrite Seams

tained results confirm the opinion that the subordinate part of hydrogen is a cause of crack formation near the weld joints (Ref. 10,2). Further investigations on factors affecting the resistance to crack formation to a larger extent than hydrogen does are needed.

There are 6 tables, 4 diagrams, 4 photos, 2 graphs and 10 references, 6 of which are Soviet, 3 English and 1 German.

ASSOCIATION: Institut elektrosvariki imeni Ye.O. Patona AN USSR (Institute of Electric Welding imeni Ye.O. Paton, AS UkrSSR)

SUBMITTED: September 5, 1958

Card 2/2

SOV/125-58-11-3/16

AUTHORS: Makara, A.M., Lakomskiy, V.I., Zhovnitskiy, I.P.

TITLE: An Investigation on the Distribution of Hydrogen in Weld Joints of Medium Alloy Steels with Austenite and Ferrite Seams (Issledovaniye raspredeleniya vodoroda v svarnykh soyedineniyakh srednelegirovannykh staley s austenitnym i ferritnym shvami)

PERIODICAL: Avtomaticheskaya svarka, 1958, Nr 11, pp 16-31 (USSR)

ABSTRACT: As contradictory opinions exist between data (Ref. 4,5) and the general opinion on hydrogen diffusion in metals, changes of hydrogen content in characteristic points of weld joints near the seam and near the base metal were investigated. Information is presented on methods to determine the hydrogen content in different zones of austenite and ferrite seams. Results of tests are compared with data obtained by computation. It was stated that in medium alloy steels, the hydrogen content increases sharply on the side adjacent to the seam, and in austenitic welds, on the side of the base metal. It is proved that the hydrogen content in zones adjacent to austenitic seams is higher than in zones of ferrite seams. The ob-

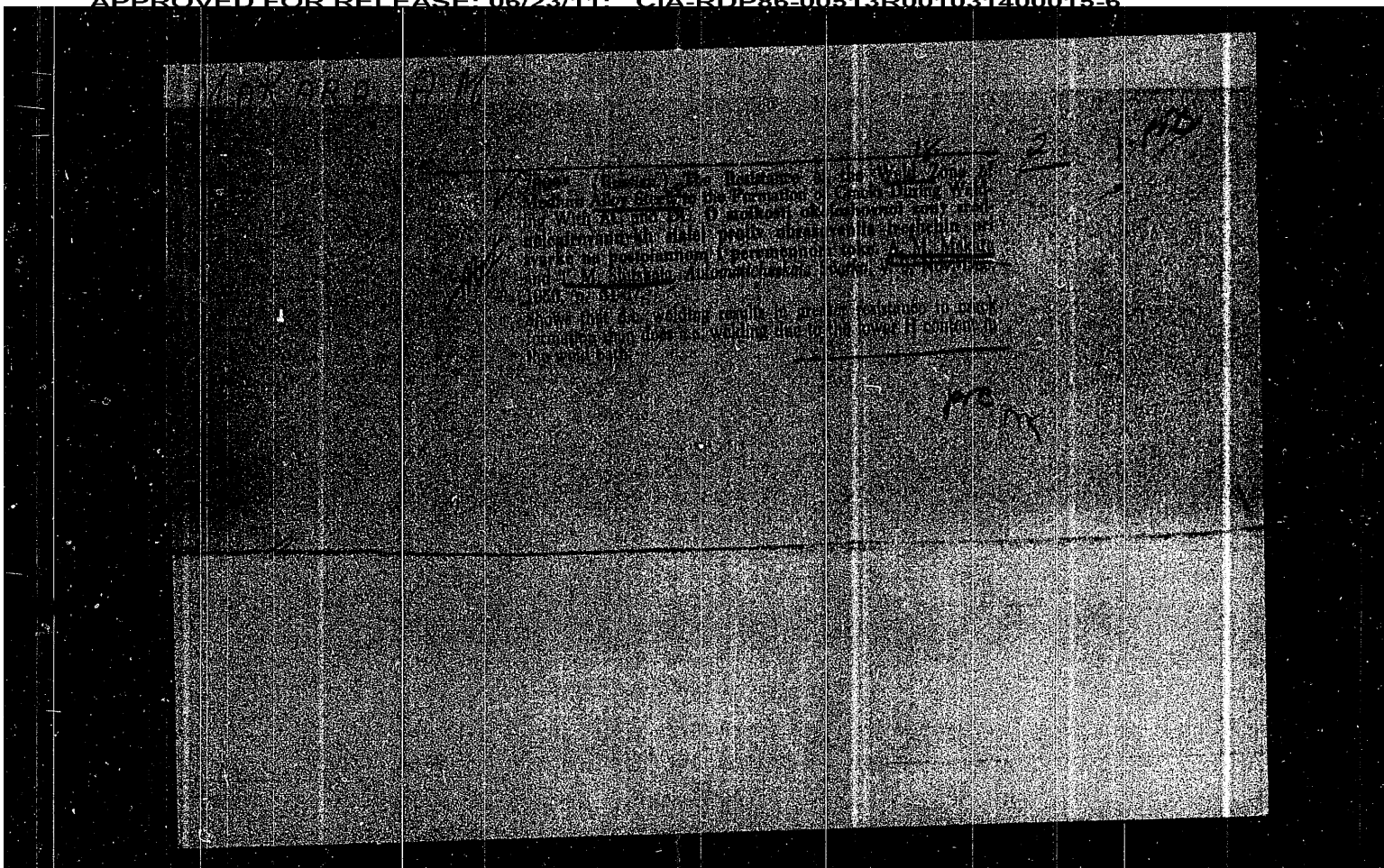
Card 1/2



MAKARA, A.M.; ROSSOSHINSKIY, A.A.

Chemical heterogeneity of the weld metal zone and crystallization planes and its connection with diffusion between solid and liquid phases during crystallization of the weld. Avtom.svar.9 no.6:65-76 N-D '56. (MLRA 10:3)

1. Ordena Trudovogo Krasnogo Znameni Institut elektrosvarki im. Ye.,O.Patona AN USSR.  
(Steel alloys---Welding)



AID P - 5250

. Avtom. svar., 4, 1-22, Ap 1956

Card 2/2      Pub. 11 - 1/15

need for heat-treatment of the specimen after welding. The method of double-layer hard-facing, used in conjunction with the triple-layer method, restores the original features of the adjacent-to-seam area without tempering after welding. Nine macro- and microstructure-photos, 6 tables and drawing; Five Russian references (1955-56).

Institution : As above

Submitted : No date

Subject : USSR/Engineering

AID P - 5250

Card 1/2 Pub. 11 - 1/15

Authors : Makara, A. M., V. F. Grabin and I. V. Novikov (Electro-welding Institute im. Ye. O. Paton)

Title : Adjacent-to-seam cracks and mechanical properties of welded joints in resistance slag welding of medium-alloy steels.

Periodical : Avtom. svar., 4, 1-22, Ap 1956

Abstract : The authors analyze the cracks which occur in the area near seams of medium-alloy chrome-nickel-molybdenum steels, and the fissures which may appear near the line of fusion. Causes and methods of prevention are outlined and studied. Mechanical characteristics of the adjacent-to-seam areas and the metal of the seam-itself are ascertained. The triple-layer method of resistance slag welding was introduced. This method restores the toughness of metal in adjacent-to-seam areas without the

MAKARA, A.M.; GOTAL'SKIY, Yu.N.; NOVIKOV, I.V.

Hot cracking of welds in automatic seam welding with flux and their  
relation to initial crystallization. Avtom.svar.8 no.4:3-11 J1-Ag'55  
(MLRA 8:11)

1. Ordena Trudovogo Krasnogo Znameni Institut elektrosvariki imeni  
Ye.O.Patona Akademii nauk USSR  
(Electric welding)

MAKARA, A.M.; GOTAL'SKIY, Yu.N.; GRABIN, V.F.

Investigation of the effect of the electric fusion welding process on the bead fusion and the width of the zone surrounding the bead in connection with the problem of steel alloy welding. Avtom. svar. 8 no.2:11-25 Mr-Apr '55. (MLRA 8:7)

1. Orden Trudovogo Krasnogo Znameni Institut elektrosvarki imeni Ye.O. Patona, Akademiya nauk USSR. (Steel alloys--Welding)  
(Electric welding)

MAKARA AM

Properties of dissociation of supercooled austenite of steel 30KhGS in the thermal cycle of the weld zone. A. M. Makara and Yu. B. Malenkov (Acad. Sci. Ukr. SSR, Kiev). *Atomot. Svarka* 1, No. 6, 2-12 (1984).—Results of magnetometric, x-ray, and metallographic studies of the dissociation of supercooled austenite in steel type 30KhGS under conditions of the thermal cycle of welding are presented. Temp. of austenitization has a definite effect on the kinetics of the dissociation of austenite during cooling. Increasing the duration of austenitization at significantly lower temps. (800-900°) causes a shift of the transition to lower temps. Products of martensitic transformation are formed during the thermal welding cycle as well as a significant amt. of residual austenite. The nature of its dissociation during welding depends chiefly upon the heterogeneity of the austenite.

J. R. Behrman

of D q

MAKARA, A.M., SLUTSKAYA, T.M.

Electric Welding

Double arc, double layer welding as a means of increasing the ductility of welds of thick metal. Avtom. svar., 4, No. 6, (21), 1951.

9. Monthly List of Russian Accessions, Library of Congress, June 1951, Uncl.  
1952



MAKAROV, A. M.

PA 160T22

USSR/Engineering - Bend Fatigue Tests      May 50  
Welds, Testing of

"Bending Testing of Welded Joints," A. M. Makarov, B. S. Kasatkin, Inst of Elec Welding imeni Acad Ye. O. Paton, Acad Sci Ukrainian SSR, 7 $\frac{1}{2}$  pp

"Avtogen Delo" No 5

Describes experiments conducted by the Inst of Elec Welding in 1948-49. Concludes present standard OST7887 for bend testing of welded joints is unsatisfactory, and should be replaced by some more expedient method. Suggests bending test for specimens with longitudinally welded seam.

160T22

On the Nature of the Primary Crystallization of the Weld Metal Pool. A. M. Makars and B. I. Medoyar. (Avtogennoe Dolo, 1948, No. 12, pp. 25-27). [In Russian]. Some results of previous experiments on the crystallization of the fused metal in a weld, which showed that wave formation in the liquid could not explain the crystallization taking place in well-defined layers, are re-examined. Further experiments with a submerged arc, in which this form of crystallization was obtained, although wave formation was excluded, are described. Photomicrographs of the crystalline structure are given, and it is shown that aluminum greatly increases the stratification. Tamman's theory of crystallization is shown to be inapplicable to the conditions existing in the fused metal during welding, the crystallization being governed by the constancy of the product of the thickness of the crystallized layer and the speed of crystallization in the direction of the temperature gradient. - S. K.

MEDOVAR, B.I.; MAKARA, A.M.; ASNIS, A.Yu.

Effect of small titanium and aluminum additions on the structure and properties of seams in automatic welding. Dop.AN URSS no.4:41-49 '48.  
(MLRA 9:9)

1.Institut elektrozvayuvannya imeni Ye.O.Patona Akademii nauk Ukrain's'koi RSR. Predstavleno diysnim chlenom AN URSS Ye.O.Patonom.  
(Welding)

MAIRA, A. H.

Kedovskiy, B. I., Makara, A. I. and Izde, A. Ye. "The improved quality of automatic heavy-gauge guns with small calibers of titanium-chromium", *Trudy avtomat. svarke pod flyuzer* (In-t elektrosvarki in. Patenty, Collection 3, 1976, p. 60-62, - Bibliog: 6 items.

SO: U-3261, 10 April 53, (Letopis 'Zhurnal 'Lykh Statey, No. 11, 1/5).

MAHARA, A. H.

MAHARA, A. H. "The tungsten-coated electrode wire for automatic welding",  
Trudy Vsesoyuz. konf-tsil po svark. avtomat. posredstvami, 9-10 dekabrya 1967, 1967,  
1968, p. 90-96.

SC: U-5211, 10 April 68, (Letopis 'Zhurnal Vyssh. Staty, no. 11, 1968).

1ST AND 2ND GROUPS										3RD AND 4TH GROUPS									
PROCESSES AND PROPERTIES INDEX																			
<p><b>22B-187. Character of Primary Crystallization of the Welding Bath. (in Russian) A. M. Makara and R. I. Medovskiy. Avtogennoe Delo (Welding), Dec. 1948, p. 28-29.</b></p> <p>Investigated particularly for steel billets and castings. It was concluded that the curve of crystallization in such cases has a jagged character due to the liberation of heat during formation of a nucleus of crystallization. Such crystallization may be represented by a wave function.</p>																			
<p>ASH-111 METALLOGICAL LITERATURE CLASSIFICATION</p>																			

22b-58. Periodicity of the Process of Preliminary Crystallization in the Weld Crater During Welding Under Flux. (In Russian). B. I. Medovar and A. M. Makara. *Avtoгенное Делo (Welding)*, Oct. 1947, p. 1-5. (Welding) primary crystallization process periodic

The primary crystallization process is shown to have a periodic character. This causes formation of a laminated structure in the weld metal. The following facts were determined: thickness of the layers for a given seam is constant; periodicity of crystallization promotes agitation of the molten metal in the weld crater; and the differences of chemical composition in the weld metal are very small.

ACC NR. AP7004194

properties of weld metal deposited without weaving were: tensile strength 173 kg/mm<sup>2</sup>, elongation of 10.2%, and reduction of area 51%. Weaving with 3 oscillations per second at 3.5 mm amplitude increased the tensile strength to 187.0 kg/mm<sup>2</sup>, the elongation to 11.5% and the reduction of area to 56.8%. The beneficial effect of weaving was observed also in other steels. For instance, the tensile strength of 56.9 kg/mm<sup>2</sup> and elongation of 38% of the Kh18N9 steel welds increased to 59.1 kg/mm<sup>2</sup> and 15.1% with weaving. Weaving has a beneficial effect only when it moves the melting pool and changes its form. Orig. art. has: 5 figures and 3 tables. [ND]

SUB CODE: 13, 11/ SUBM DATE: 10Jun66/ ORIG REF: 009/  
ATD PRESS: 5116

Card 2/2



ACC NR: AP7004194

SOURCE CODE: UR/0125/67/000/001/0031/0035

AUTHOR: Makara, A.M.; Kushnirenko, B.N.

ORG: Electric Welding Institute im Ye.O. Paton, AN UkrSSR. (Institut elektrosuarki AN UkrSSR)

TITLE: Transverse motion of arc improves the structure and properties of welded joints

SOURCE: Avtomaticheskaya svarka, no. 1, 1967, 31-35

TOPIC TAGS: welding, TIG welding, *steel metal welding*  
~~structure, weld metal property, superstrength steel, austenitic steel~~ *42Kh2GSNM steel*

ABSTRACT: The effect of "weaving" a transverse arc on the structure and properties of TIG welds in steel sheets has been investigated. Beads were deposited on 42Kh2GSNM superstrength steel sheets with the arc weaving at a frequency of 0—8 oscillation per second and an amplitude of 0—8 mm. It was found that under certain conditions, weaving reduces the formation of columnar structure and dendritic nonuniformity in the weld metal, reduces the heat input in the weld-adjacent zone, increases the penetration, and improves the weld mechanical properties, especially ductility. The

Card 1/2

UDC: 621.791.75

MAKARA, A.A.; GOTAL'SKIY, Yu.N.

Investigating thermal processes in the heat-affected zone of the  
weld joint during electric welding under flux of tempered steels.  
Avtom. svar. 8 no.5:25-32 S-O '55. (MLRA 9:1)

1.Ordena Trudovogo krasnogo znameni institut elektrosvarki imeni  
Ye.O.Patona AN USSR. (Steel--Welding)

MAKARA, A., kand. tekhn. nauk

Miraculous seam. Nauka i zhyttia 12 no.12:6 D '62.  
(MIRA 16:8)

1. Zamestitel'direktora Ordena Trudovogo Krasnogo Znameni  
Instituta elektrosvarki AN UkrSSR im. Patona.

SOV/109-4-8-8/35  
Electrostatic Control of the Ignition of Glow-discharge Tubes

their characteristics are shown in Figures 4. The tubes are suitable for carrying out various logical operations. From the investigation, it is concluded that the electrostatic control of the ignition of glow discharges is practicable. The ignition characteristics appear to be very stable.

There are 4 figures and 2 references, 1 of which is English and 1 German.

SUBMITTED: March 5, 1959

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Card 3/3

SOV/109-4-8-8/35

Electrostatic Control of the Ignition of Glow-discharge Tubes

characteristics were taken in neon, argon, mixtures of neon and argon, helium and argon at pressures ranging from 10 - 300 mm Hg. The effect of the geometric factors (the size of the hole in the control electrode and the inter-electrode distances) were measured in a mixture consisting of neon and 1% argon. All the measurements were carried out at a constant current in the auxiliary gap. The ignition characteristics, i.e. the anode breakdown voltage, as a function of the control grid voltage, are shown in Figures 2 and 3. Figure 2a shows the ignition characteristics for various gases and gas mixtures; it was found that the current to the auxiliary electrode preceding the breakdown was less than 0.1  $\mu$ A. Figure 3a illustrates the ignition characteristics for three different distances between the auxiliary and the control electrodes; Figure 3b gives the ignition characteristics for different diameters of the hole in the control electrode. The principle of the electrostatic control of the ignition can be employed to devise tubes having special characteristics. Examples of such tubes and

Card2/3

✓

**AUTHORS:** Makar-Limanov, G.Ye., Metlitskiy, Yu.Ya. <sup>SOV/109-4-8-8/35</sup>

**TITLE:** Electrostatic Control of the Ignition of Glow-discharge Tubes

**PERIODICAL:** Radiotekhnika i elektronika, 1959, Vol 4, Nr 8, pp 127<sup>4</sup> - 1277 (USSR)

**ABSTRACT:** The aim of the investigation was to determine the ignition of glow discharge in the presence of plasma. The charges from this plasma were "propagated" towards the anode by employing the electrostatic field. The investigation was carried out on a tube whose diagram is given in Figure 1. This consists of a cathode K, the auxiliary electrode G<sub>1</sub>, a control electrode G<sub>2</sub> and an anode. A small discharge with a current of about 30  $\mu$ A was ignited between the cathode and the auxiliary electrode; the cathode was furnished with a cone (Figure 1) which permitted the localisation of the auxiliary discharge. The two auxiliary electrodes were provided with holes (Figure 1) and the interelectrode distances could be varied from 0.1 to 2 cm. The ignition

Card1/3

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MAR 11, 1966

Transmitted to the Director of Central Intelligence  
the following information was received from the  
1. 13 1966. (SIC 1240)

1. 1. 1966 (SIC 1240)

MAKAR, O.S.

Second group of parallactic schemes and formulae in indirect  
methods of distance measurement. Dop. AN URSS no.8:1039-1045  
'65. (MIRA 18:8)

1. L'vovskiy politekhnicheskii institut.



MAKAR, O.S.

First group of particular parallaxic schemes and formulae of  
indirect distance measuring methods. Dop. AN URSS no. 1288-1293  
'65. (MIRA 18:5)

1. L'vovskiy politekhnicheskiy institut.

MAKAR, O.S.

Brief review of the fundamental general parallaxic schemes and formulae in the theory of generalization of indirect range finding methods. Dop. AN URSR no.3:328-335 '65. (MIRA 18:3)

1. L'vovskiy politekhnicheskii institut.

MAKAE, O.S.

Use of the theory of generalization of symmetric parabolic  
schemes of indirect range finding methods in stereophotogrammetry.  
Dop. AN URSR no.11:1469-1477 '64. (MIRA 18:1)

1. I'zovskiy politekhnicheskii institut. Assistant  
akademikom AN UkrSSR S.I. Subbotina.

L 59199 455

ACCESSION NR: AP5000612

ASSOCIATION: L'vivs'kyi politekhnichnyi instytut (L'viv Politechnic Institute)

SUBMITTED: 18Jan64

ENCL: 00

SUB CODE: ES

NO REF BOV: 003

OTHER: 000

Card 2/2

5/10/64 EWT(1) GW  
ACCESSION NR: AP5000612

S/0021/64/000/011/1469/1477

AUTHOR: Makar, O. S.

TITLE: Application of the generalized theory of symmetrical parallactic schemes of indirect distance measuring methods to stereophotogrammetry

SOURCE: AN UssSR. Dopodivl, no. 11, 1964, 1469-1477

TOPIC TAGS: parallactic scheme, symmetrical parallactic scheme, distance measuring method, indirect distance measuring method, stereophotogrammetry, photogrammetry, photogrammetric formula, stereoscopic model

ABSTRACT: New photogrammetric formulas are derived from the generalized theory of symmetrical parallactic schemes of indirect distance measuring methods. The formulas can be applied to photogrammetry, indicating that there is a strict mathematical relationship between the general theoretical principle of indirect distance measuring methods, developed by the author (DAN UssSR 1964, pp. 488, 757, and 1054), and photogrammetry. The new photogrammetric formulas offer new possibilities of determining the deformation of a stereoscopic model in stereophotogrammetry. Orig. art. has: 28 formulas and 7 figures.

Card 1/2

MAKAR, O.S.

Theory of the generalization of symmetrical parallactic  
schemes of indirect range-finding methods. Dop. AN URSSR  
no.8:1054-1059 '64. (MIRA 17:8)

1. L'vovskiy politekhnicheskii institut. Predstavleno  
akademikom AN UkrSSR V.B. Porfir'yevym [Porfyr'iev, V.B.].

MAKAR, O.S.

General theoretical basis of indirect range-finding methods.  
Dop. AN URSSR no. 6:757-762 '64. (MIRA 17:9)

1. L'vovskiy politekhnicheskoy institut. Predstavleno akademikom  
AN UkrSSR V.B.Porfir'yevym [Porfyr'iev, V.B.].

MAKAR, O.S.

General parallactic scheme of indirect methods of distance measurement and its geometrical interpretation. Dop. AN URSR no.4:488-491 '64. (MIRA 17:5)

1. L'vovskiy politekhnicheskij institut. Predstavleno akademikom AN UkrSSR V.B.Porfir'yevym [Porfyr'iev, V.B.].



MAKAR, Milivoje, inz. (Beograd, Internacionalnih brigada 3);  
TRECAKOVIC, Stevan, inz.

Haulage in the open pit mining. Tehnika Jug 18 no. 8:  
Supplement: Rudarstvo metalurg 1' no. 8:1472-1475 Ag '63.

1. Sef operative Rudarskog basen "Kolubara", Vreoci (for Makar).
2. Sef elektromasinske sluzbe Rudarskog basena "Kolubara", Vreoci (for Trecakovic).

MAKAR, I.A.

Effect of sodium sulfate on the amino acid composition and physical properties of sheep's wool [with summary in English]. Dop.AN URSSR no.3:392-395 '61. (MIRA 14:3)

1. Nauchno-issledovatel'skiy institut zemledeliya i skotovodstva zapadnykh rayonov USSR. Predstavleno akademikom AN USSR M.F.Gulya [Hulyi, M.F.].  
(Sodium sulfate) (Amino acids) (Wool)

EMMAR, I. A., GZHTSOV L. A. (USSR)

"The Amino-Acid Composition of Wool in Relation to the Quantity  
of Sulphur in the Food of the Sheep."

Report presented at the 5th Int'l. Biocchemistry Congress,  
Moscow, 10-16 Aug 1961

MAKAR, I.A., Cand Bio Sci -- "Effect of feeding, sodium  
sulphate <sup>up to</sup> on the chemical composition, physical properties,  
~~wool~~ <sup>of wool</sup> shearing, and the living weight of sheep." L'vov, 1961.  
(Min of Agri UkSSR. L'vov Zoovet Inst) (KL, 8-61, 237)

MAKAR, G.S.

Stressed state in an infinite cylinder caused by a moving  
axisymmetric thermal field. Vop. mekh. real. tver. tela  
no.3:42-51 '64. (MIRA 17:11)

F. MAKAR.

Journal of the Iron and  
Steel Institute  
July 1954  
Heat-Treatment and  
Heat-Treatment Furnaces

✓ Induction Heating at Medium and High Frequencies. F. Makar. (*Elektrotehnicki Vestnik*, 1953, 21, (9-10), 249-250). [In Serbo-Croat]. The theoretical basis of high and medium frequency induction heating, covering the ranges 0.5-3 and 3-500 kilocycles/sec., is developed. The design of coreless induction furnaces for the surface treatment of metals, hardening of gear-teeth, soldering, and melting is discussed, and the appropriate frequency ranges, heat transfer, power output, primary-to-secondary current ratio, and efficiency, are determined. Rates of heat transfer 20 times higher than those obtained by flame-heating can easily be reached.—P. F.

MAKAR, D.A., kand.med.nauk

Paper chromatographic study of the amino acid content in the  
blood plasma of goiter patients. Vrach. delo no.4: 94-98 Ap'63.  
(MIRA 16:7)

1. Kafedra gospiatal'noy khirurgii (zav.-prof. L.N.Kuzmenko)  
L'vovskogo meditsinskogo instituta.  
(AMINO ACIDS) (BLOOD---ANALYSIS AND CHEMISTRY)  
(GOITER)

PODILCHAK, M.L.; MAKAR, D.

The amino acid composition of the uterus and adrenal glands following prolonged administration of oestrogens. *Physiol. bohemoslov.* 12 no.1: 18-22 '63.

1. Chair of Clinical Surgery, Medical Institute, Lvov, USSR.  
(UTERUS) (ADRENAL GLANDS) (ESTROGENS) (AMINO ACIDS) (ISOLEUCINE)  
(LEUCINE) (CYSTINE) (LYSINE) (HISTIDINE) (ARGININE) (GLYCINE)  
(SERINE) (ASPARTIC ACID) (GLUTAMATES) (THREONINE) (ALANINE)  
(PROLINE) (TYROSINE) (METHIONINE) (VALINE) (PHENYLALANINE)



KUZMENKO, L.N., prof.; MAKAR, D.A., kand.med.nauk

Postoperative thyrotoxic crisis; its prevention and treatment.  
Klin.khir. no.11:49-52 N '62. (MIRA 16:2)

1. Kafedra gospiatal'noy khirurgii (zav. - prof. L.N. Kuzmenko)  
L'vovskogo meditsinskogo instituta.  
(THYROID GLAND—SURGERY)

PODIL'CHAK, M. D.; MAKAR, D. A.

Amino acid composition of hepatic and splenic tissues following prolonged estrogen administration. Acta physiol. acad. sci. hung. 20 no.4:347-359 '61.

1. Kafedry gospi'tal'noy Khirurgii L'vovskogo meditsinskogo instituta L'vov.

(ESTROGENS pharmacol) (LIVER pharmacol)  
(SPLEEN pharmacol) (AMINO ACIDS metab)

KUZMENKO, L. N.; PODILCAK, M. D.; MAKAR, D. A.

Studies on the amino acid composition of Brown-Pearce carcinoma tissues. Neoplasma 8 no.6:567-574 '61.

1. Kafedra gospiatal'noy khirurgii L'vovskogo meditsinskogo instituta L'vov, SSSR.

(NEOPLASMS metab) (AMINO ACIDS metab)

MAKAR, D.A., kand.med.nauk

Role of blood transfusion in treating thyrotoxicosis. Vest.khir.  
no.6:28-30 '61. (MIRA 15:1)

1. Iz gosptal'noy khirurgicheskoy kliniki (zav. - prof. L.N.  
Kuzmenko) L'vovskogo meditsinskogo instituta.  
(THYROID GLAND--DISEASES) (BLOOD--TRANSFUSION)

KUZMENKO, L.N., prof.; PODIL'CHAK, M.D., doktor med.nauk; MAKAR, D.A.,  
kand.med.nauk

Chromatographic investigation of the blood in malignant neoplasms.  
Vrach. delo no.4:70-75 Ap '61. (MIRA 14:6)

1. Kafedra gosptal'noy khirurgii (zav. - prof., doktor med.nauk  
L.N.Kuzmenko) L'vovskogo meditsinskogo instituta.  
(BLOOD—EXAMINATION) (PAPER CHROMATOGRAPHY) (CANCER)

PODIL'CHAK, M.D.; MAKAR, D.A.; YURMIN, Ye.A.

Effect of estrogenic hormones on blood cholesterol and proteins.  
Acta med.hung.16 no.3:269-277 '60.

1. Iz kafedry gosspital'noy khirurgii (zav. kafedroy prof.  
L.N. Kuz'menko) L'vovskogo meditsinskogo instituta.  
(CHOLESTEROL blood)  
(BLOOD PROTEINS pharmacol)  
(ESTROGENS pharmacol)

MAKAR, D.A., kand.med.nauk (L'vov, ul.Zan'kovetskoy,d.9,kv.6)

Changes in the protein content of blood plasma in goiter during  
compound surgical treatment. Nov. khir. arkh. no.1:51-55 Ja-F '60.  
(MIRA 15:2)

1. Kafedra gospi'tal'noy khirurgii (zav. - prof. L.N.Kuzmenko)  
L'vovskogo meditsinskogo instituta.  
(BLOOD PROTEINS) (GOITER)

MAKAR, D. A.

Makar, D. A. "The role of blood transfusions in the therapy of thyrotoxicosis." L'vov State Medical Inst. L'vov, 1956. (Dissertation for the Degree of Candidate in Medical Science)

So: Knizhnaya letopis', No. 27, 1956. Moscow. Pages 94-109; 111.



MAKAR, A.; KARMAZIN, N., inzh. (Moskva); DROBYSHEVSKIY, V., inzh. (Moskva);  
KOLESNIKOVA, N., inzh.; SAF'YAN, B., inzh.; POSPELOV, N., inzh.  
(Gor'kiy); VESELOV, A.

Suggested, developed, introduced. Izobr.i rats. no.2:34-35 F  
'60. (MIRA 13:8)

1. Chlen soveta Vsesoyuznogo obshchestva izobretateley i ratsionalizatorov stroitel'nogo tresta, g. Krasnotur'insk (for Makarov).
2. Tekhnicheskiy otдел tipografii "Pечатnyy dvor" imeni A.M. Gor'kogo, Lenindrad (for Kolesnikova, Saf'yan).
3. Predsedatel' soveta Vsesoyuznogo obshchestva izobretateley i ratsionalizatorov, poselok Maksatikha, Kalininskaya oblast' (for Veselov).

(Technological innovations)

MAKAPENKO, YA

20648 Makapenko, Ya Bol'shaya Kuznitsa Pol'shi. [Gornaya Sileziya]. Oronok,  
1949, No. 27, s. 13-14

SO: LETOPIS ZHURNAL STATEY - Vol. 28, Moskva, 1979

AUTHOR: Makans, Z. Senior Engineer 107-58-7-8/43

TITLE: Imeni A.S. Popov (Imeni A.S. Popova)

PERIODICAL: Radio, 1958, Nr 7 p 11 (USSR)

ABSTRACT: The author gives a summary of the history and the present activity of the Riga Radio Plant imeni A.S. Popov. It is planned to double the output of radio receivers in the Latvian republic by 1965.

ASSOCIATION: Rzhzskiy radiozavod imeni A.S. Popova (Riga Radio Plant imeni A.S. Popov)

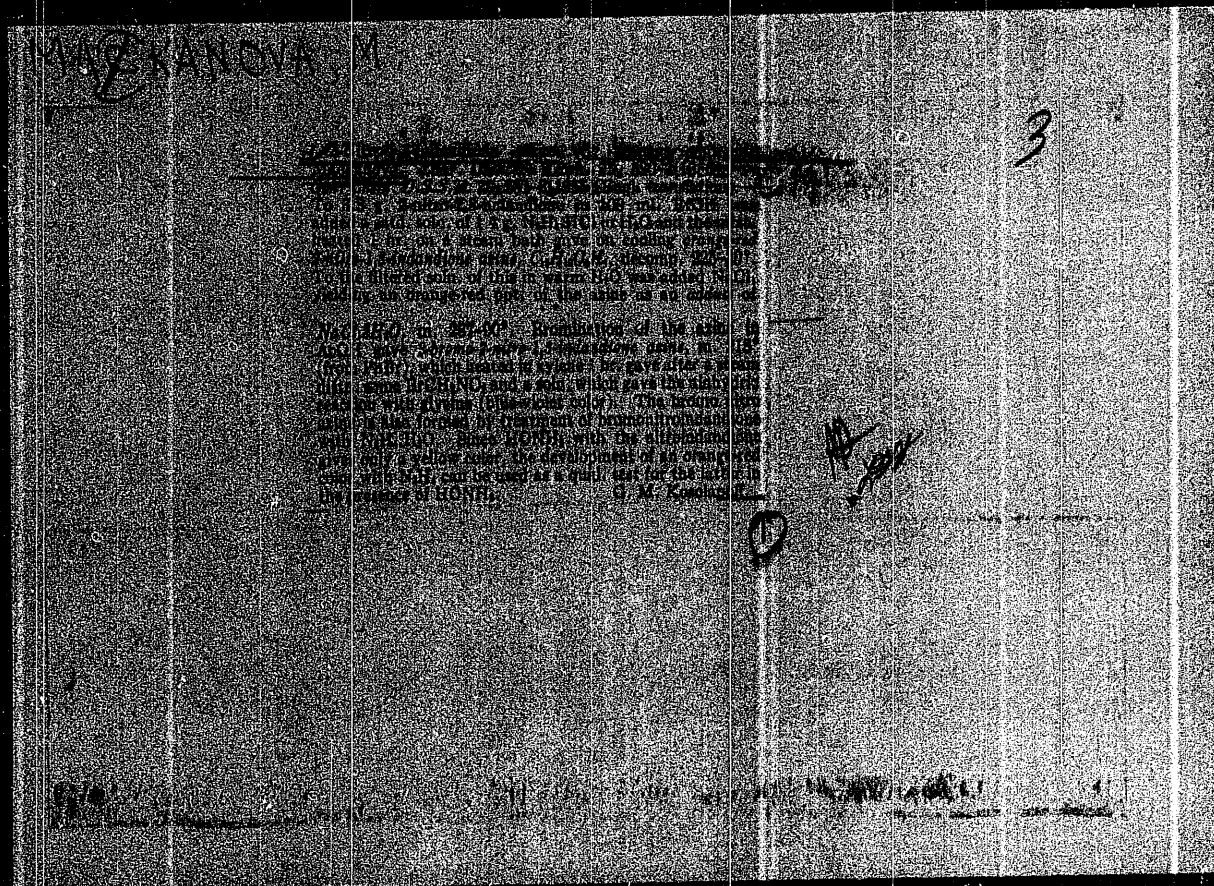
1. Radio receivers--Production--USSR

Card 1/1

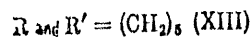
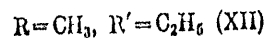
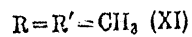
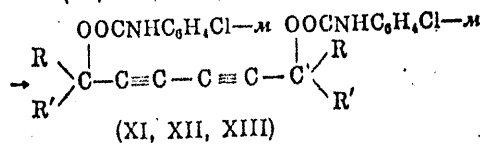
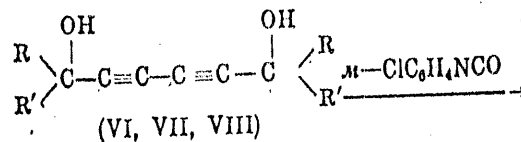
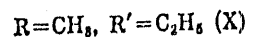
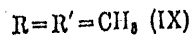
SIBIRTSEVA, V.Ye., inzh.; KUSTOVA, S.D., kand.khimicheskikh nauk;  
KOGENMAN, G.M., inzh.; MAKANOVITSKAYA, I.S., inzh.

Industrial method of preparing ambrial (bicyclohomofarnesal).  
Masl. - zhir. prom. 27 no.12:31-32 D '61. (MIRA 14:12)

1. Vsesoyuznyy nauchno-issledovatel'skiy institut sinteticheskikh i natural'nykh dushistykh veshchestv (for Sibirtseva, Kustova).
  2. Moskovskaya kosmeticheskaya fabrika (for Kogenman, Makanovitskaya).
- (Farnesal)



ACC NR, AP6032912

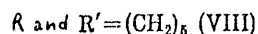
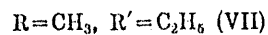
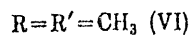
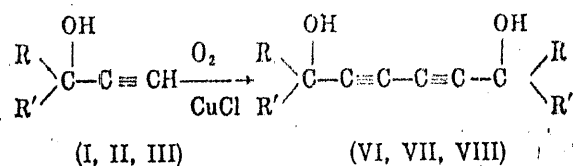


The melting points of the compounds were (°C): (IX), 218-220°; (X), 200-201°; (XI), 235-237°; (XII), 224-226°; (XIII), 242-244°.

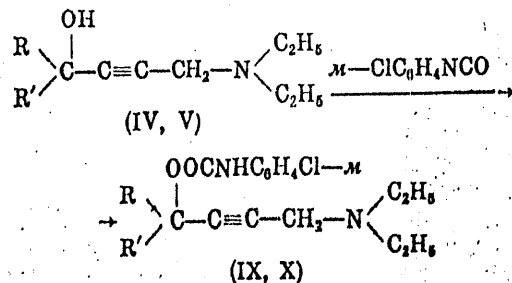
SUB CODE: 07/ SUBM DATE: 07May66/ ORIG REF: 010/ OTH REF: 004

Card 3/3

ACC NR: AP6032912



By reacting acetylenic amino carbinols (IV, V) and diacetylenic glycols (VI, VII, VIII) with *m*-chlorophenyl isocyanate in benzene or acetone solution with heating, diethylaminoalkyl (IX, X) and alkadiynyl (XI, XII, XIII) esters of *N*-*m*-chlorophenylcarbamic acid were obtained:



Card 2/3

ACC NR: AP6032912

SOURCE CODE: UR/0360/66/000/003/0085/0088

AUTHOR: Azerbayev, I. N.; Sarbayev, T. G.; Makanov, U.

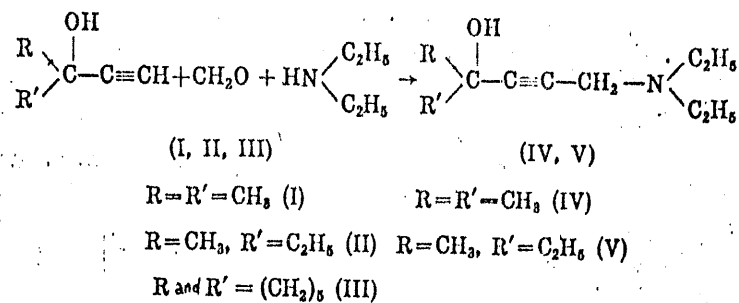
ORG: none

TITLE: Dialkylaminoalkynyl and alkadiynyl esters of N-M-chlorophenylcarbamic acid

SOURCE: AN KazSSR. Izvestiya. Seriya khimicheskaya, no. 3, 1966, 85-88

TOPIC TAGS: carbamic acid, acetylene compound, weed killer

ABSTRACT: Esters of arylocarbamic acids and acetylenic amino alcohols, diacetylene glycols, were synthesized and studied as herbicides. The reactions were

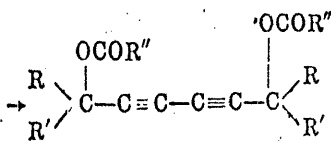


Card 1/3

UDC: 547.37:632.954



ACC NR: AP6032911

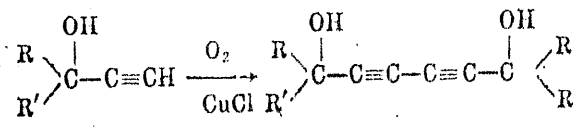
R=R'=CH<sub>3</sub>, R''=CH<sub>2</sub>OC<sub>6</sub>H<sub>5</sub> (IX)R=R'=CH<sub>3</sub>, R''=CH<sub>2</sub>OC<sub>6</sub>H<sub>4</sub>Cl<sub>2</sub> (X)R=R'=CH<sub>3</sub>, R''=CH<sub>2</sub>OC<sub>6</sub>H<sub>4</sub>Cl<sub>3</sub> (XI)R=C<sub>2</sub>H<sub>5</sub>, R'=C<sub>2</sub>H<sub>5</sub>, R''=CH<sub>2</sub>OC<sub>6</sub>H<sub>5</sub> (XII)R=CH<sub>3</sub>, R'=C<sub>2</sub>H<sub>5</sub>, R''=CH<sub>2</sub>OC<sub>6</sub>H<sub>4</sub>Cl<sub>2</sub> (XIII)R=CH<sub>3</sub>, R'=C<sub>2</sub>H<sub>5</sub>, R''=CH<sub>2</sub>OC<sub>6</sub>H<sub>4</sub>Cl<sub>3</sub> (XIV)R R'=(CH<sub>2</sub>)<sub>6</sub>, R''=CH<sub>2</sub>OC<sub>6</sub>H<sub>4</sub>Cl<sub>2</sub> (XV)R R'=(CH<sub>2</sub>)<sub>5</sub>, R''=CH<sub>2</sub>OC<sub>6</sub>H<sub>4</sub>Cl<sub>3</sub> (XVI)

The physical constants are as follows: (VII), BP 145-146° at 3 mm, n<sub>D</sub><sup>20</sup> 1.5380; (VIII), MP 145-146°; (IX), MP 33-34°; (X), MP 110-111°; (XI), MP 150-151°; (XII), MP 28-29°; (XIII), MP 95-96°; (XIV), MP 141-142°; (XV), MP 116-118°; (XVI), MP 146-147°. The herbicide activity of the compounds is being tested.

SUB CODE: 07/ SUBM DATE: 07May66/ ORIG REF: 006/ OTH REF: 001

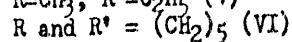
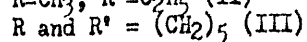
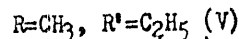
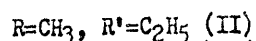
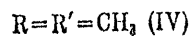
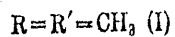
Card 3/3

ACC NR: AP6032911

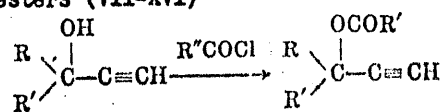


(I-III)

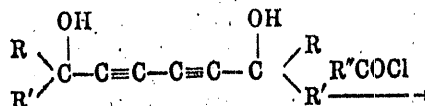
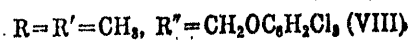
(IV-VI)



Esterification of these compounds with chlorides of phenoxyacetic, 2,4-dichlorophenoxyacetic and 2,4,5-trichlorophenoxyacetic acid in the presence of pyridine yielded the corresponding esters (VII-XVI)



(VII, VIII)



Card 2/3

ACC NR: AP6032911

SOURCE CODE: UR/0360/66/000/003/0081/0084

AUTHOR: Azerbayev, I. N.; Sarbayev, T. G.; Makanov, U.

ORG: none

TITLE: Aryloxyacetic esters of acetylenic and diacetylenic alcohols

SOURCE: AN KazSSR. Izvestiya. Seriya khimicheskaya, no. 3, 1966, 81-84

TOPIC TAGS: acetylene compound, pesticide

ABSTRACT: In order to find effective new weed killers and study the effect of acetylene and diacetylene groups on their biological activity, a series of aryloxyacetic esters of acetylenic and diacetylenic alcohols were prepared. Oxidative dimerization of carbinols (I-III) produced 2,7-dimethyl-3,5-octadiyne-2,7-diol (IV), 3,8-dimethyl-4,6-decadiyne-3,8-diol (V) and bis(1-hydroxycyclohexyl)-1,3-butadiyne (VI)

Card 1/3

UDC: 547.37:632.954

MAKANEC, Branimir, inz. (Zagreb)

Digital simulator. Elektrotehnicar 17 no.5/6:68-70 '64.

1. Institute of Physical Medicine and Rehabilitation, Zagreb.

POLAND/Microbiology. Sanitary Microbiology.

F-3

Abs Jour: Ref. Zhur.-Biol., No 7, 1958, 28953.

bacteria were isolated from river water shows that  
stricter demands must be made for purifying such  
sewage waters.

Card : 3/3

MAKANDER

F-3

POLAND/Microbiology. Sanitary Microbiology.

Abs Jour: Ref. Zhur.-Biol., No 7, 1958, 28953.

Author : Makander.

Inst : Not given.

Title : A Study of Acid-Resistant Bacilli Isolated from River  
Water into Which Purified Sewage Waters Drain.

Orig Pub: Izuchenie kisloutopornyykh palochech, vydelennykh iz vody  
reki, v kotoruyu spuskayutsya ochishchennye stochnye vody.  
Acta microbiol. polon., 1956, 5, No 1-2, 201-205.

Abstract: Samples of river water (22), taken at a distance of  
10-20 km below drainage of purified sewage waters of  
tuberculosis sanatoria, were tested for the presence  
of acid-resistant bacilli. The latter were found  
in 12 samples by methods of homogenization, flotation,

Card : 1/3

ALIMBARASHVILI, A.N.[deceased]; MAKANDARASHVILI, Sh.S.;  
PARSADANOVA, E.I.

Observations of a 1.44 m wavelength solar radio emission.  
Biul. Abast. astrofiz. obser. no.29:51-54 '62.  
(MIRA 16:4)  
(Solar radiation--Observations)

MAKANDARASHVILI, Sh.S.

Statistical study of solar radio bursts on a frequency of  
209 Mc/s. Biul. Abast. astrofiz. obser. no. 29:47-50 '62.  
(MIRA 16:4)

(Radio astronomy) (Sun)



MAKAN, F.

"Speech signal in cybernetics and communications" by M.A.Sapozhkov  
[Sapozhkov, M.A.]. Reviewed by F.Makan. El tech cas 15 no. 4:  
256 '64.

MAKAN, F.

Solving linear systems by block schematic diagrams. El  
tech cas 14 no.4:240-242 '63.

KORYAKIN, Sergey Fedorovich, kand. ekon. nauk, dots.; BERGSHTEYN, Iosif L'vovich, kand. ekon. nauk, dots.; Prinimal uchastiye: ELLINSKIY, Yu.P., st. prep.; SHRAMSHTEYN, Ye.A., dots., retsenzent; CHERKASOV-TSIBIZOV, A.A., st. prepod., retsenzent; MILYUKOV, M.A., st. prepod., retsenzent; KOZHAROV, N.D., kand. ekon. nauk, retsenzent; MAKAL'SKIY, I.I., kand. ekon. nauk, retsenzent; KREMER, B.A., inzh., retsenzent; PETRUCHIK, V.A., kand. ekon. nauk, red.; GUBERMAN R.L., kand. ekon. nauk, red.; RODIN, Ye.D., kand. ekon. nauk, red.; DUBCHAK, V.Kh., inzh., red.; MARTIROSOV, A.Ye., inzh., red.; Palyushkin, V.A., inzh., red.; BELOV, M.I., doktor geogr. nauk, red.; SINITSYN, M.T., inzh., red.; KOLESNIKOV, V.G., kand. tekhn. nauk, red.; ZAMAKHOVSKIYA, A.G., kand. ekon. nauk, red.; KUZ'MIN, T.P., inzh., red.; NEMCHIKOV, V.I., kand. tekhn. nauk, red.; GEKHTBARG, Ye.A., inzh., red.; FILIPPOV, K.D., red.; KRUGLOVA, Ye.N., red.

[Economics of the merchant marine] Ekonomika morskogo transporta. Izd.2., perer. i dop. Moskva, Transport, 1964.  
527 p. (MIRA 18:1)

VISHNEPOL'SKIY, S.A., kand. ekon. nauk; BAYEV, S.M., inzh. putey soobshcheniya; BONDARENKO, V.S.; RODIN, Ye.D.; CHUVLEV, V.P.; TURETSKIY, L.S.; SMIRNOV, G.S.; SHAPIROVSKIY, D.B.; OBERMEYSTER, A.M.; SINITSIN, M.T.; KOGAN, N.D.; PETRUCHIK, V.A.; GRUNIN, A.G.; KOLESNIKOV, V.G.; MARTIROSOV, A.Ye.; KROTKIY, I.B. [deceased]; ZENEVICH, G.B.; MEZENTSEV, G.A.; KOLOMOYTSEV, V.P., kand. tekhn. nauk; ZAMAKHOVSKAYA, A.G., kand. tekhn. nauk; MAKAL'SKIY, I.I., kand. ekon. nauk; MITROFANOV, V.F., kand. ekon. nauk; CHILIKIN, Ya.A.; BAKAYEV, V.G., doktor tekhn. nauk, red. Primali uchastiye: DZHAVAD, Yu.Kh., red.; GUBERMAN, R.L., kand. ekon. nauk, red.; RYABCHIKOV, P.A., red.; YAVLENSKIY, S.D., red.; BAYRASHEVSKIY, A.M., kand. tekhn. nauk, red.; POLYUSHKIN, V.A., red.; BALANDIN, G.I., red.; ZOTOV, D.K., red.; RYZHOV, V.Ye., red.; BOL'SHAKOV, A.N., red.; VUL'FSON, M.S., kand. ekon. nauk, red.; IMITRIYEV, V.I., kand. ekon. nauk, red.; ALEKSANDROV, L.A., red.; LAVRENOVA, N.B., tekhn. red.

[Transportation in the U.S.S.R.; marine transportation] Transport SSSR; morskoi transport. Moskva, Izd-vo "Morskoi transport," 1961. 759 p. (MIRA 15:2)

(Merchant marine)

MAKAL'SKIY, I. I.

Planning coastal transportation rates. Mor.flot 19 no.9:5-7 S '59.  
(MIRA 12:11)

1. Ispolnyayushchiy obyazannosti nachal'nika sektora Tsentral'nogo  
nauchno-issledovatel'skogo instituta ekonomiki i ekspluatatsii vod-  
nogo transporta.

(Shipping--Rates)

MAKAL'SKIY, I.I.

FRIDENSHTEYN, Ya., inzhener; MAKAL'SKIY, I.

Problems of further improving coastwise cargo transportation tariffs.  
Mor.flot 17 no.3:6-8 Mr '57. (MLRA 10:3)

1. TSentral'nyy nauchno-issledovatel'skiy institut ekonomiki i  
ekspluatatsii vodnogo transporta.  
(Coastwise shipping--Rates)

MAKALISH, A.A.

Influence of mud applications on various receptor zones of the skin on the bioelectric, motor, and secretory activity of the stomach in dogs. Vop. kur., fizioter., i lech. fiz. kul't. 25 no. 6:486-491 N-D '60. (MIRA 14:2)

1. Iz Ukrainskogo instituta kurortologii i bal'neologii v Odesse (dir. - dots. A.V. Sokolov, nauchnyy rukovoditel' raboty - zav. kafedroy fiziologii Odesskogo meditsinskogo instituta - prof. F.N. Serkov).

(BATHS, MOOR AND MUD) (SKIN) (STOMACH) (ELECTROPHYSIOLOGY)

TISHENKO, A.; MAKALINSKIY, N. N.

Increase guidance in work methods. Sots.trud 4 no.8:128-129  
Ag '59. (MIRA 13:1)

1. Nachal'nik Normativno-issledovatel'skoy stantsii No.4  
Permskogo sovnarkhoza (for Tishenko).  
(Coal mines and mining)



APPROVED FOR RELEASE: 06/23/11: CIA-RDP86-00513R001031400015-6

TISHENKO, A.M., inzh.; MAKALINSKIY, N.N.

Instructions on determining the degree of rock resistance to  
drilling. Shakht. stroi. no.5:29-30 '58. (MIRA 11:6)  
(Mining engineering)

KURMAYEV, O.D.; MAKALEYEV, I.Sh.

Effect of direct current poles on the conductivity of myocardium  
altered by necrotic tissue. Bul. eksp. biol. i med. 56 no.7:  
44-46 JI'63 (MIRA 17:3)

1. Iz laboratorii fiziologii ( zav. - prof. O.D. Kurmayev)  
Kazanskogo pedagogicheskogo instituta. Predstavlena deystvitel'-  
nym chlenom AMN SSSR A.V. Lebedinskim.

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